

# The Effects of Stock Market on Economic Growth and Development of Nigeria

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## Abstract

This research study seeks to examine whether the stock market promotes economic growth and development in Nigeria. The stock market is a common feature of a modern economy and it is reputed to perform some necessary functions, which promote the growth and development of the economy.

To achieve this objective, Ordinary Least Squares regression (OLS) was employed using the data from 1984 to 2008. The results indicated that there is a positive relationship between economic growth and the stock market development variables used. With almost 95.77 percent R-squared and 94.92 percent adjusted R-squared, the result showed that economic growth in Nigeria is adequately explained by the model for the periods of 25 years (i. e. from 1984 to 2008). By implications 95.77 percent of the variation in the growth of economic activities is explained by the independent variables.

The results of the research, established positive links between the stock market development and economic growth, suggests the pursuit of policies geared towards rapid development of the stock market. Also, all sectors of the economy should act in a collaborative manner such that the optimum benefits of linkages between stock market and economic growth can be realized in Nigeria.

**Keywords:** Nigeria, Stock Market, Economic Growth

## 1.0 INTRODUCTION

The determination of the overall growth of an economy depends on how efficiently the stock market performs its allocative functions of capital. As the stock market mobilizes savings, concurrently it allocates a larger proportion of it to the firms with relatively high prospects as indicated by its rate of returns and level of risk. The importance of this function is that capital resources are channeled by the mechanism of the forces of demand and supply to those firms with relatively high and increasing productivity, thus enhancing economic expansion and growth (Alile, 1997). Mobilization of resources for national development has long been the central focus of development economists. As a result, the centrality of savings and investment in economic growth has been given considerable attention in the economic literatures (Rostow, 1960; Aigbokan, 1995; Demorgue-Kent and Levine, 1996). The stock market enables governments, and industries to raise long-term capital for financing new projects, and expanding/modernizing commercial concerns. If capital resources are not provided to those economic areas, especially industries where demand is growing and which are capable of increasing production and productivity, the rate of expansion of the economy often suffers. A unique benefit of the stock market to corporate entities is the provision of long-term, non-debt financial capital.

The existing literature clearly shows that developed economies had explored their stock market through resources mobilization to enhance economic growth and development (Demorguc-Kunt and Levine, 1996). This is not the case in Nigerian economy where emphasis was placed on money market with little consideration for capital market (Nyong, 1997). And, with the increasing size and liquidity of stock markets, their relationship to economic growth is worth examination. There are two schools of thought: one holds that stock market development is important for economic growth, the other holds that it is not. Greenwood and Smith (1996) showed that stock markets lower the costs of mobilizing savings and facilitate savings thus promoting economic growth. Bencivenge et al. (1996), Levine (1996), and Levine and Zervos (1997), argued that stock market liquidity plays important role in economic growth. On the other hand, Demirguc-Kunt and Levine (1996) pointed out that increased liquidity may reduce growth via the reduction in saving rates due to uncertainty about savings and adversely affect corporate governance on account of investors' myopia about market liquidity. This research therefore tends to assess the stock market development and economic growth by examining the long-run relationship between the two variables.

In an extensive work done by Golden Sachs in 2001, he identified Nigeria as one of the economies in Africa that has the potential of becoming one of the 20 largest economies by year 2020 and that Nigeria poised to emerge as part of the next eleven "N11" economies after the BRIC (Brazil, Russia, India, and China). To achieve the vision 2020, Nigeria must maintain an annual average growth rate of 12.4% over the next 10 years and translate the growth into meaningful development.

The stock market is to serve as the driver and catalyst to achieving the vision and to help attain full diversification of the economy. The idea is to strengthen the domestic financial market by developing competence and skills for financial services industry, improves access to finance and build an integrated

infrastructure for the financial industry. Create a vibrant capital and stock markets and help more Nigerian make more livings through the markets.

The rest of the paper is structured as follows: a conceptual and empirical overview of stock market development – meaning and variable; economic growth, role of stock market in Nigerian Economy, how to raise capital on the stock market are discussed in section two. Section three provides the data source and the methodology. Section four presents and discusses the results. Conclusion and recommendations are contained in the last section.

## **2.0 CONCEPTUAL AND EMPIRICAL OVERVIEW**

### **2.1 CONCEPTUAL ANALYSIS OF STOCK MARKET AND ECONOMIC GROWTH**

#### **2.1.1 MEANING OF STOCK MARKET:**

Simply put, stock market is a market place where buyers and sellers meet to exchange a unique intrinsic commodity – shares, stocks, bonds – for the purpose of raising long-term capital for the modernization and expansion of projects by companies, governments, and allied parastatals. Stock market is different from a stock exchange, which is an entity (a corporation or mutual organization) in the business of bringing buyers and sellers of stock together. Those who invest their monies in buying shares get in return share (or stock) certificates as evidence of their ownership of some proportion of the issuing companies as well as get dividends.

#### **2.1.2 STOCK MARKET VARIABLES:**

##### **Market Capitalization:**

Market Capitalization is the total value of listed shares of companies in the stock market. Market Capitalization Ratio (MCR) measures the value of listed shares divided by GDP.

##### **Total Value of Shares Traded:**

Value of Shares Traded is the total value of shares traded in the stock market. Total Value of Shares Traded ratio (STR) measures total value of shares traded on the stock market exchange divided by GDP.

##### **Turnover Ratio:**

This ratio equals the value of total shares traded divided by market capitalization.

#### **2.2.1 ECONOMIC GROWTH**

Fundamentally, economic growth is an increase in the productive capacity of an economy, that is, an increased in the level of output, which can be achieved when all the factors of production are fully employed. McGraw Hill dictionary of modern economics defines economic growth as an increase in a nation's goods and services. Growth is therefore discussed in relation to real output. GDP is the total monetary value of goods and services produced within a country in a given period, usually a year. On the over hand, GNP is the total monetary value of goods and services produced and earned by or transferred to resident nationals of a country. NNP is obtained when the value of depreciation is deducted from the GNP. In determining by how much output produced per person expands over time, GDP must be corrected for population increases. This gives the GDP per capita.

#### **2.2.2 ECONOMIC GROWTH DETERMINANTS**

There are three main determinants of a country's rate of economic growth, which are as follows: (1) Labour Force Growth; (2) Growth of the capital stock and (3) Technical progress.

A growing labour supply may enable a community to produce bigger combinations of goods and services and so bring about an outward shift in its production possibility frontier. This, in turn can lead to an increase in output per head and hence a potential improvement in social welfare. The growth of the labour force depend on, the natural increase in the population, international migrations and the participation rate. The growth of the capital stock on the other hand, is determined by an expansion of a country capital stock through net investment. This expansion increases the country's stock of productive resources and so represents another possible source of economic growth.

The third determinant of economic growth is technical progress. It improves the quality of the capital stock of labour force and this is another possible source of economic growth, which takes the form of improved techniques of production, improved machinery, invention or improvements in education. The effect of technical progress is to raise the productivity of the stock of capital and labour. In Nigeria, the three determinants are all used to determine the economic growth or well-being.

### **2.3 THEORETICAL FRAMEWORK**

**HISTORICAL GROWTH:** Since the Industrial Revolution a major factor of productivity was the substitution of energy for human and animal labour. By the late 19<sup>th</sup> Century, Power and machinery were creating over-production which eventually caused a reduction of the hourly work done. Mass production of the 1920s created over-production, which was one of several causes of the Great Depression of the 1930s economic growth resumed later aided by demand for entirely new goods and services, creating enough new demand to stabilize the work done.

**CLASSICAL GROWTH THEORY:** The modern conception of economic growth began with the critique of

Mercantilism especially by the Physiocrats. The theory of Physiocrats was that productive capacity, itself, allowed for growth and the improving and increasing capital to allow that capacity was "The Wealth of Nation". David Ricardo argued that trade was a benefit to a country, because if one could buy good more cheaply from abroad, it meant that there was more profitable work to be done here.

**NEOCLASSICAL GROWTH MODEL:** The notion of growth as increased stocks of capital goods was codified as the Solow-Swan Growth Model, which involved a series of equations which shows the relationship between labour-time, capital goods, output, and investment and accordingly, the role of technological changes became crucial. The model which was the first attempt to model long-run growth analytically. This model assumes that countries use their resources efficiently and that there are diminishing returns to capital and labour increases. Important predictions were: (i) increasing capital relative to labour creates economic growth; (ii) poor countries with less capital per person will grow faster because each investment in capital will produce a higher returns than rich countries with ample capital; (iii) because of diminishing returns of capital economies will eventually reach a point at any increase in capital will no longer create economic growth; (iv) countries can overcome steady state and continue growing by investing new technology; and (v) output per-capita depends on the rate of savings.

**HARROD-DOMAR GROWTH MODEL:** The Harrod-Domar Growth Model gives some insights into the dynamics of growth. The equilibrium growth rate of output is equal to the ratio of the marginal propensity to save and the capital-output ratio. E.g.  $[g = \frac{s}{\mu}]$  where,  $g$  is the rate of output and productivity in the economy;  $s$

the marginal propensity to save and  $\mu$  the capital-output ratio. This is very important, because it tells us how the economy can grow such that the growth in the capacity of the economy is matched by the demand for the economy's output.

## 2.4 EMPIRICAL LITERATURE REVIEW

**Hicks** (1969) argued that the industrialization process in England was promoted by the development of the financial sector which increased the access of the government and people to funds that were used to finance capital projects which led to the development of the economy. **Levine** (1991) argued that developed stock market reduces both liquidity stock and productivity stock of businesses. This in turn increases the access of businessmen to investment funds as well as enhancing the production capacity of the economy, thereby leading to higher economic growth. **Bartov** (1992) highlighted the relationship that exists between stock prices and expected earning using the earnings expectation models to predict expected earnings.

**Atje and Jovanoic** (1993) present a cross-country study of stock market and economic growth over the period 1980-1988. They found a significant correlation between average economic growth and stock market capitalization for forty countries. **World Bank** (1995) opined that stock market development does not merely follow economic development, but provides the means to predict future rates of growth in capital, productivity and per capita GDP. The conclusion of the Bank is that increases in banking and stock market development lead to increases in real per capita growth. **Levine and Zervos** (1996) examines whether there is a strong empirical association between stock market development and long-run economic growth. The study used pooled cross-country time-series regression of forty-one countries from 1976 to 1993 to evaluate this association. The study toe the line of **Demirguc-Kunt and Levine** (1996) by conglomerating measures such as stock market size, liquidity, and integration with world markets, into index of stock market development.

**Irving** (2004) considered the links between stock exchanges and the overall socio-economic development to be tenuous, non-existent or even harmful. He advised African countries not to devote further scarce resources and efforts to promoting stock exchange, since there are many wealthier problems to address in African: high poverty levels, inadequate social services and undeveloped infrastructure. **Adam and Sanni** (2005) examined the role of stock market in Nigeria's economic growth using Granger-Causality test and regression analysis. They discovered a one-way causality between GDP growth and market capitalization. They advised that government should encourage the development of the capital market since it has a positive relationship with economic growth. **Obamiro** (2005) investigated the role of the Nigerian Stock Market in the light of economic growth. He reported that a significant positive effect of stock market on economic growth and thereby suggested that government should create more enabling environment so as to increase the efficiency of the stock market, and to attain higher economic growth. In the light of the above arguments, it has become very necessary to examine the importance which stock market play on economic growth and development of Nigeria.

## 2.5 ROLE OF STOCK MARKET IN NIGERIAN ECONOMY

Briefly, the Nigerian Stock Exchange plays the following roles within the economy: (a) It provides a platform for raising long-term capital for expansion and modernization of companies and government investment activities; (b) It nurtures and provides capital to small and medium-scale enterprises via its Second-tier Securities Market; (c) It is a means of allocation the nation's real and financial resources, between various industries and companies; (d) It provides liquidity for the conversion of investments into cash; (e) It is a measure of confidence in the economy and serves as an important leading index of economic activity; (f) It provides industrial

management with some idea of the current cost of capital and this can be important in determining the level and rate of new investment; (g) It is a vehicle for broadening the ownership base and geographically operating the nations' wealth via privatization; and (h) Ensures the survival and continuity of companies even after the death of the initial promoters of enterprises.

## 2.6 HOW TO RAISE CAPITAL ON THE STOCK EXCHANGE

An enterprise can raise capital through the Stock Exchange by applying through an Issuing Houses or Stock-broking firm backed by the necessary documents as outlined in the Listing Requirement of the Nigerian Stock Exchange. This is done by offering a minimal portion of the company's shares to the investing public. The market entry involves many things. The issue will involve members of the public and consequently there are numerous regulations to ensure that public is protected, e.g. by requiring detailed information on the company's history and current circumstances to be made available to potential investors. From the company's point of view, it will be concerned to ensure that it does as well as is possible out of the share issue, particularly in terms of the share price and control implications for the exiting owners. The company will need to employ the services of professional advisers which will usually include among others the Stockbrokers, Reporting Accountants and Solicitors to the issue.

## 2.7 ORIGIN OF STOCK MARKET

In 12<sup>th</sup> Century France, the courtier de change was concerned with managing and regulating the debts of agricultural communities on behalf of the banks. Because these men also traded with debts, they could be called the first brokers. In early 13<sup>th</sup> Century Bruges commodity traders gather inside the house of a man called Vander Beurse, and in 1309 they institutionalized this. The idea quickly spread around Flanders and neighboring countries. In the middle of the 13<sup>th</sup> Century, Venetian bankers began to trade in government securities. In 1351, the Venetian Government outlawed spreading rumors intended to lower the price of government funds. Bankers in Pisa, Verona, Genoa, and Florence also began trading in government securities during the 14<sup>th</sup> Century. This was only possible because these were independent city states not ruled by a duke but a council of influential citizens.

The Dutch later started joint stock companies, which let shareholders invest in business ventures and get a share of their profits or losses. In 1602, the Dutch East India Company issued the first shares on the Amsterdam Beurs, in the early 17<sup>th</sup> Century. The Dutch pioneered short selling, option trading, debt-equity swaps, merchant banking, unit trusts, and other speculative instruments. Now, there are stock markets in virtually every developed country and most developing countries, with world's biggest markets in United States, Germany, and France.

## 2.8 IMPORTANCE OF STOCK MARKET TO DEVELOPING COUNTRIES

The Stock Market performs the following functions: (a) Raising capital for expansion and investment; (b) Mobilizing savings for investment; (c) Facilitate company growth; (d) Redistribution of wealth; (e) Corporate Governance; (f) Creates investment opportunities for small investors; and (g) Barometer of the economy

## 2.9 STOCK MARKET EFFICIENCY: THE NIGERIAN EXPERIENCE

For stock market to perform the function for which it is established, it must be efficient in its operational character. Efficient and sufficient information must be freely available for national-profit maximization investors. In many developing countries with emerging stock markets, banks are fearful of stock market development because they think stock market will reduce the volume of their business.

## 3.0 RESEARCH METHODOLOGY

### 3.1 SOURCES OF DATA

Secondary sources of data were employed for this study. These include Nigerian Stock Exchange Fact Books, The Nigerian Stock Exchange Annual Reports and Accounts (for various years), Central Bank of Nigeria Statistical Bulletins, Federal Office of Statistics Statistical Bulletin. The variable use covers 1984 to 2008 annually on Nigerian economy and the Nigerian Stock Market, which was based on their authenticity and reliability.

### 3.2 MODEL FORMULATION

The study uses the Neoclassical Growth Model to explain the source of growth in the Nigerian economy. This is given as:  $g = f(l, k, t)$  where:  $g$  is the growth of GDP;  $l$  is the quantity of labour;  $k$  is the capital formation/investment; and  $t$  is the technology. The application of this method, however, has been extended to incorporate other determinants of economic activities such as stock market development (proxy by growth of market capitalization, market turnover and all-share-index) and openness of the Nigerian economy i. e. total imports and exports divided by GDP).

### 3.3 MODEL SPECIFICATION

In line with the above specification, the research model is specified thus:

$$\text{GDP} = f(\text{GMC}, \text{TNOV}, \text{ASI}, \text{OPN}) \dots \dots \dots (1)$$

GDP = Gross Domestic Product, proxy for Economic Growth and Development in Nigeria over the years.



(Source: CBN Statistical bulletin Golden Jubilee Edition, 2008);

GMC = Growth of Market Capitalization (Source: Nigerian Stock Exchange Annual Reports and Accounts of various years);

TNOV = Total Market Turnover (Source: NSE Annual Reports and Accounts of various years);

ASI = All-share-index (Source: NSE Annual Reports and Accounts of various years);

OPN = Openness of the Nigerian Economy (total imports and exports/GDP), proxy for attraction of foreign investment. (Sources: Imports and Exports values were obtained from CBN Statistical bulletin, Golden Jubilee Edition, 2008).

Thus, the econometric model is specified as:

$$\text{GDP} = \alpha_0 + \beta_1 \text{GMC} + \beta_2 \text{TNOV} + \beta_3 \text{ASI} + \beta_4 \text{OPN} + \epsilon_t \dots \dots \dots (2)$$

#### 4.0 DATA ANALYSIS

The result of the linear regression for the relationship between stock market development and economic growth obtains using Eview 4 Econometric Software presented in appendix II.

Therefore, the model can be shown as:

$$\text{GDP} = 215.65 - 0.0463\text{GMC} + 0.1424 \text{TNOV} + 0.01 \text{ASI} + 10.33921\text{OPN} + \epsilon_t \dots \dots \dots (3)$$

s.e (9.8695) (0.0208) (0.0700) (0.0032) (3.0982)

t-stat. (21.8502) (-2.2249) (2.0328) (3.0147) (3.3371)

prob. (0.0000) (0.0378) (0.0556) (0.0068) (0.0033)

R = 0.9786, R<sup>2</sup> = 0.9577, Ra<sup>2</sup> = 0.9492, D-W stat. = 1.2601, Prob. (F-stat.) = 0.0000

#### 4.1 INTERPRETATION ANALYSIS OF THE REGRESSION RESULTS

The variables went through the R<sup>2</sup>-test, Durbin-Watson statistic test as well as the probability test. The results of the estimation show that the explanatory variables accounted for approximately 95.77 percent variation in economic growth. The R<sup>2</sup> of 0.9577, which is commonly use to measure the goodness of fit of the regression equation measure the proportion of the total variable in GDP explained by the regression model. Adjusted R<sup>2</sup> of 0.9492 also shows the goodness of fit but with the degree of freedom. The F-statistic of 113.1124 indicates that the explanatory variables are jointly significant and are capable of explaining changes in economic growth. The DW-statistic of 1.2601 measures the level of autocorrelation among the stochastic variables. This illustrates the absence of auto (serial) correlation, and also there is no negative serial correlation between the concerned variables as the maximum value of 2.3 is allowed. The results reveal that Growth of Market Capitalization, Total Market Turnover, All-Share-Index, and Openness of the Nigerian Economy to foreign investment, have a significant positive effect on economic growth at 5 percent level of significance.

The finding shows that the stock market development (as jointly measured by Growth of Market Capitalization, Market Turnover, All-Share-Index, and Openness of the Nigerian Economy to foreign investment) raises economic growth in consistent with Atje and Jovanoic (1993), Ojo (1998), Abdullahi (2005), Obamiro (2005), Liu and Has (2006), and Erwan Quintin (2007) who suggested that government should create more enabling environment so as to increase the efficiency of the stock market, and to attain higher economic growth.

#### 5.0 RECOMMENDATIONS

The findings from the study raise some policy issues and recommendations, which will reinforce the link between the stock market and economic growth in Nigeria. Given the results above, some policy implications and suggestions still need to advanced which are as follows:

- i. Stock market operates in a macroeconomic economic environment, it is necessary that the environment must be an enabling one in order to realize its full potentials.
- ii. Since stock market development has statistical positive influence on economic growth. Implies, stock market development increases the ability of firms to raise capital. Thus, firms will be able to increase their investment spending and expand production of goods and services which translate to higher growth rate over time.
- iii. The effect of openness (foreign direct investment) on economic growth in Nigeria is yet to realize its full potential, and effective policies must be put in place in order to reap the benefits of international trade as well attract foreign investment. It is believed that openness facilitates not only the inflow of foreign investment but also enhance the production capacity of firms that do business in the country as well as increase their access to capital on the stock market. This also increases output of goods and services, and raises economic growth.
- iv. The stock market is known as a relatively cheap source of funds when compared to the money market and other sources. The cost of raising funds in the Nigerian Stock Market is however, regarded to be very high. There should be a review downward of the cost, so as to enhance its competitiveness and improve the attractiveness as a major source of raising funds.
- v. In order to develop the Nigerian Stock Market, I will like to recommend government to remove all

- impediments to stock market development in the form of tax, legal and regulatory barriers because they are sometimes disincentives to investment.
- vi. Government should strength the capacity of the Nigerian Security and Exchange Commission so as to check and prevent sharp practices by market operators (particularly speculators) in order to safeguard the interest of shareholders. Recent experience has shown that the confidence of many shareholders is waning due to the fortune of the stock market and many are reluctant to invest in shares and other securities. This tends to undermine the growth potential of the stock market with its negative consequences on the economy. To this end, government should take a bold step in arresting the meltdown and restoring the confidence of shareholders, and the possibility of a bail-out of the stock market should not be ruled out.
  - vii. Government should invest more and develop the nation's infrastructure (such as roads, power, telecommunications, e. t. c) in order to create an enabling environment for businesses to grow, increase the productivity and efficiency, and the rate of returns of firms. Also government should employ appropriate trade policies that promote the inflow of international capital and foreign investment, so as to enhance the production capacity of the nation.

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**APPENDIX I: NIGERIAN STOCK MARKET INDICATORS (1984 - 2008)**

YEAR	REAL GDP N'BILLION (2)	GMC N'BILLION (3)	TNOV N'BILLION (4)	ASI % (5)	IMPORT N'BILLION (6)	EXPORT N'BILLION (7)	OPENNESS OF THE ECONOMIC (6)+(7)/(2)
1984	183.56	5.50	0.25	100.00	7.18	9.09	0.099
1985	201.04	6.40	0.31	127.30	7.06	11.72	0.093
1986	205.97	7.70	0.49	163.80	5.98	8.92	0.072
1987	204.81	8.90	0.29	190.90	17.86	30.36	0.235
1988	219.88	9.70	0.25	233.60	21.45	31.19	0.239
1989	236.73	12.00	0.65	325.30	30.86	57.97	0.375
1990	267.55	15.90	0.31	513.80	45.72	109.89	0.582
1991	265.38	22.60	0.23	783.00	89.49	121.54	0.795
1992	271.37	32.50	0.49	1,107.60	143.15	205.61	1.285
1993	274.83	46.90	0.66	1,548.80	165.63	218.77	1.399
1994	275.45	65.50	0.99	2,205.00	162.79	206.06	1.339
1995	281.41	171.10	1.84	5,092.20	755.13	950.66	6.373
1996	293.75	285.60	7.06	6,992.10	562.63	1,309.54	6.373
1997	302.02	292.00	11.07	6,440.50	845.72	1,241.66	6.911
1998	310.89	263.30	13.50	5,716.00	837.42	751.86	5.112
1999	312.18	300.00	14.10	5,266.40	862.52	1,188.97	6.571
2000	329.18	478.60	28.15	8,111.00	985.02	1,945.72	8.903
2001	356.99	662.56	57.68	10,965.00	1,358.18	1,867.95	9.037
2002	433.20	763.90	59.41	12,137.70	1,512.70	1,744.18	7.518
2003	477.53	1,359.00	120.40	21,222.60	2,080.24	3,087.89	10.823
2004	527.58	2,112.00	225.80	23,844.50	1,987.05	4,602.78	12.491
2005	561.93	2,900.00	262.94	24,085.80	2,800.86	7,246.53	17.880
2006	595.83	5,120.00	470.25	33,189.30	3,412.18	7,324.68	18.020
2007	634.25	13,295.00	2,086.29	57,990.20	4,381.93	8,126.00	19.721
2008	674.89	9,560.00	2,379.14	31,450.80	5,921.45	9,774.51	23.257

**Sources:** Nigerian Stock Exchange Annual Reports and Accounts, various years; SEC Annual Reports and Accounts; CBN Statistical Bulletin, Golden Jubilee Edition, 2008

**APPENDIX II: MULTIPLE REGRESSION RESULT**

Dependent Variable: Gross Domestic Product (GDP)

Method: Least Squares

Sample: 1984 – 2008

Included observations: 25

VARIABLE	COEFFICIENT	STANDARD ERROR	t-STATISTIC	PROB.
C	215.6505	9.8695	21.8502	0.0000
GMC	-0.0464	0.0208	-2.2249	0.0378
TNOV	0.1424	0.0700	2.0328	0.0556
ASI	0.0098	0.0032	3.0147	0.0068
OPN	10.3392	3.0982	3.3371	0.0033

R-squared 0.9577 Mean Dependent Var. 347.9280

Adjusted R-squared 0.9492 S.D. Dependent Var 146.1665

S.E of Regression 32.9440 Akaike Info Criterion 10.0044

Sum Squared Resid. 21706.09 Schwarz criterion 10.2481

Log Likelihood -120.0544 F-statistic 113.1124

Durbin-Watson Stat 1.2601 Prob (F-statistic) 0.0000

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